REMARKS

Applicant respectfully requests reconsideration of the present application in view of the foregoing amendments and in view of the reasons that follow.

Claims 1, 17, 23, 28-30, and 33 and 35 are currently being amended.

This amendment changes claims in this application. A detailed listing of all claims that are, or were, in the application, irrespective of whether the claim(s) remain under examination in the application, is presented, with an appropriate defined status identifier.

Of the claims not withdrawn from consideration, claims 1, 2, 5, 6 and 15-36 are now pending in this application.

Allowable subject matter

Applicants appreciate the indication that claims 19-22 are allowed and that claim 34 would be allowable if rewritten in independent form. Applicants have not amended claim 34 at this time, because for the reasons given below, applicants believe that independent claim 33, from which claim 34 depends, is allowable.

Rejections under 35 U.S.C. § 103

Claims 1, 2, 18 and 26-33 stand rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,412,946 to Oshima et al. (hereafter "Oshima"). Claims 23, 35 and 36 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Oshima in view of U.S. Patent No. 6,244,044 to Bartley (hereafter "Bartley"). Claims 5 and 15 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Oshima in view of U.S. Patent No. 6,151,547 to Kumar et al. (hereafter "Kumar"). Claim 16 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Oshima in view of Kumar and further in view of design choice. Claims 6 and 17 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Oshima in view of U.S. Patent No. 5,124,303 to Kobayashi et al. (hereafter "Kobayashi") and U.S. Patent No. 4,149,998 to Tauster et al. (hereafter "Tauster"). Claims 24 and 25 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Oshima in view of U.S. Patent No. 6,173,571 to

Kaneko et al. (hereafter "Kaneko"). Applicants respectfully traverse these rejections, insofar as they pertain to the claims as presently amended, for at least the following reasons.

Independent claim 1 has been amended to clarify that "the device for producing hydrogen in at least one of combustion gas and exhaust gas includes at least a hydrogen producing catalyst containing at least one noble metal, and a combustion control device for controlling at least one selected from the group consisting of operating parameters of an internal combustion engine and combinations of the operating parameters, the operating parameters including fuel injection timing, spark timing, opening and closing timings of intake and exhaust valves of the internal combustion engine, to control at least one of combustion gas and exhaust gas flowing into the hydrogen producing catalyst." Thus, the device for producing hydrogen includes a combination of a hydrogen producing catalyst, as that catalyst is recited in claim 1, and additionally a combustion control device for controlling at least one selected from the group consisting of operating parameters of an internal combustion engine and combinations of the operating parameters to control at least one of combustion gas and exhaust gas flowing into the hydrogen producing catalyst. Neither Oshima nor the remaining references cited in the rejections of the claims suggest the combination as recited in claim 1. ↖ how about Barkley?

Oshima discloses one embodiment where a reforming catalytic converter 102 receives fuel from a conduit 13 and air via control valve 109 (Figure 1, col. 5, line 47 to col. 6, line 7). Oshima discloses another embodiment where an H_2 generator 120 receives natural gas and air (Figure 9, col. 7, line 54 to col. 8, line 2).

Oshima does not disclose, however, a device for producing hydrogen including a combination of (1) a hydrogen producing catalyst, as that catalyst is recited in claim 1, and additionally (2) a combustion control device for controlling at least one selected from the group consisting of operating parameters of an internal combustion engine and combinations of the operating parameters to control at least one of combustion gas and exhaust gas flowing into the hydrogen producing catalyst. Specifically, Oshima does not disclose a hydrogen producing device including the combustion control device controlling the operation parameters of an engine to control at least one of combustion gas and exhaust gas flowing

into a hydrogen producing catalyst. Oshima discloses that the inputs to the reforming catalytic converter 102 or the H_2 generator 120 come from outside the engine. Thus, Oshima does not disclose a combustion control device controlling the operation parameters of an engine to control at least one of combustion gas and exhaust gas flowing into a hydrogen producing catalyst.

The remaining references cited in the rejections do not cure the deficiencies of Oshima. Bartley was cited for allegedly teaching a method for reducing cold-start hydrocarbon emissions. Kumar was cited for allegedly teaching that it is conventional in the art to utilize zirconium oxide as a stablizer and a promoter in a catalytic converter. Kobayahi and Tauster were cited for allegedly respectively teaching a catalyst for treatment of waste gas that contains solid acidic zirconium oxide, and that catlysts that contain an oxide of zirconium are known to suppress the chemisorption of hydrogen. Kaneko was cited for allegedly teaching that it is conventional in the art to utilize a NOx treating catalyst containing at least one substance selected from the group consisting of alumina, alkali metal and alkaline earth metal lines. None of these references, however, suggest a device for producing hydrogen including a combination of (1) a hydrogen producing catalyst, as that catalyst is recited in claim 1, and additionally (2) a combustion control device for controlling at least one selected from the group consisting of operating parameters of an internal combustion engine and combinations of the operating parameters to control at least one of combustion gas and exhaust gas flowing into the hydrogen producing catalyst.

Moreover, the present invention of claim 1 provides advantages not suggested by Oshima or the remaining references cited in the rejections. As disclosed in the present specification on page 24, first paragraph, the combination of a combustion control device and a hydrogen producing catalyst can improve the efficiency of the production of H_2. Oshima and the remaining references cited in the rejections, failing to suggest the combination of a combustion control device and hydrogen producing catalyst as a device for producing hydrogen, also fail to suggest the advantages of such a combination.

Independent claims 28, 29, 30, 33 and 35 have been amended to include limitations corresponding to the limitations added to independent claim 1, and are patentable for at least

the same reasons. The dependent claims under rejection 2, 5-6, 15-18, 23-27, 31, 32, 34 and 36, depend from one of independent claims 1, 30, 33 and 35 and are patentable for at least the same reasons, as well as for further patentable features recited therein.

Applicant believes that the present application is now in condition for allowance. Favorable reconsideration of the application as amended is respectfully requested.

The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by a check being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicant hereby petitions for such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 19-0741.

Respectfully submitted,

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